

and are derived from the embryos or possibly from the degenerating muscle fibres. The author could not establish any relationship between the increase and decrease of the eosinophiles of the blood and the numbers of eosinophiles of the bone-marrow, for whatever were the alterations in the circulating blood the numbers of eosinophiles in the bone marrow remained fairly constant. Further studies of the eosinophile cells showed that these cells occurred in large numbers in the peritoneal cavity of normal guinea-pigs. They were also found in the mesentery. Some of them were polymorphonuclear, but a large percentage were mononuclear eosinophiles. After injection of certain bacteria into the peritoneal cavity these cells disappeared almost entirely, while following subcutaneous inoculation their numbers in the peritoneal cavity were not altered. After bacterial infection the numbers of eosinophiles in the circulating blood decreased.

The author believes that these experiments show that bacteria produce substances in the animal which exert a negative chemotactic influence upon the eosinophilic leukocytes. He also thinks it probable that eosinophile cells are formed locally in the mesentery and peritoneal cavity.

Sleeping Sickness.—GREIG and GRAY, the Commission of the Royal Society sent to Africa to study the sleeping sickness, make a continuation report of their work (*Reports of the Sleeping Sickness Commission of the Royal Society*, No. 6, London, August, 1905).

The first paper has to do with the further investigations of the disease in Uganda, the equatorial region at the headwaters of the Nile. Upon examining sixty-two cases in various stages of the disease, including ear cases, they found the lymphatic glands enlarged in all. In the juice obtained by puncture of these glands, trypanosomes were found in all but three cases. This enlargement is an early sign in the disease, and the authors believe the disease first manifests itself as a polyadenitis, which is caused by the *Trypanosoma gambiense*.

A study of the blood in fifty-seven cases showed that an anemia did not occur in uncomplicated cases. A lymphocytosis was always present, and in many cases the eosinophiles were increased.

From a study of the cerebrospinal fluid in twenty-four cases it was found that the cells present were practically all mononuclears, and that these cells increased in numbers as the disease progressed.

In a certain proportion of cases in the last stage of the disease the author could isolate from the gland juice a diplostreptococcus. This they believe to be a secondary infection, and found by experiments on animals that the organism did not affect the course of experimentally produced sleeping sickness.

After studying a number of cases of so-called "trypanosoma fever" over a considerable length of time, the author believed that sleeping sickness is the usual termination of that disease, unless the patient dies of an intercurrent infection, to which they are relatively susceptible. A few cases may develop an immunity and recover. A comparative study of the presence of the tsetse flies (*Glossina palpalis*) and of cases of sleeping sickness shows that the fly occurs where the disease is prevalent, but that there exist "clean" fly belts where the flies are present, but do not apparently harbor the parasite. Further observations of cases published in the last report of the Commission show that flies

that have previously fed on cases of sleeping sickness may convey the disease to monkeys.

After studying organisms derived from various animals the Commission finds that there are in Uganda varieties of trypanosomes which differ from *Trypanosoma gambiense* and which are pathogenic for various animals. The author concludes from a long series of animal inoculations that four varieties of trypanosomes are encountered. Tsetse flies were found capable of conveying from an infected to a healthy monkey all the varieties found in animals, while a somewhat similar biting fly was unable to do so.

The author describes for the first time a lesion found in all cases in which the stomach was examined postmortem. It consists of hemorrhagic areas of various sizes in the mucosa of the stomach, most numerous toward the pylorus, which show dark centres and light-red peripheries. Microscopic examination show them to be superficially ulcerated areas of hemorrhage.

Following the main report of the Commission there are in the volume three other papers. The first is a report by Greig on the extent and distribution of sleeping sickness in the Nile Valley. It is followed by a study by Austen on the distribution of the various species of tsetse flies in Africa.

The last paper, by Gray and Tulloch, deals with the multiplication of *Trypanosoma gambiense* in the alimentary canal of *Glossina palpalis*. Flies were first fed on infected monkeys, and later, at intervals of forty-eight hours, on a series of normal monkeys, a different monkey being used at each feeding. The trypanosomes were found to increase greatly in the alimentary canal of the fly twenty-four hours after feeding on infected monkeys. Each subsequent feeding acted as a fresh stimulus for the growth of the trypanosomes. The great increase of the trypanosomes in the alimentary canal of the fly occurred in about 10 per cent. of the flies examined.

In two out of 200 flies that were not allowed to feed on the infected monkeys a careful examination disclosed trypanosomes. The injection into monkeys of the contents of the alimentary canal of flies which contained many trypanosomes always failed to produce infection. Trypanosomes were found in the salivary gland of a tsetse fly which had been fed on an infected monkey.

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